## Georgia eHealth Summit











Georgia Health Information Exchange Inc.



#### Georgia eHealth Summit

## Health IT and Your Own Person-Centered Health System

Robert M. Kolodner, MD, FACMI

Chief Health Informatics Officer Open Health Tools, Inc.

&

Former National Coordinator for Health IT US Department of Health & Human Services

#### Agenda

- My Background
- 4 Building Blocks for Our Future Health System
  - 1. "Ideal": A Square Wave Life Curve
  - 2. A Systems Perspective on Health
  - 3. Transforming Health & Health Care
  - 4. A Learning Health System
- The Capstone of Technology Improvement
- Personal Health

#### My Background

- Physician (Psychiatrist)
- U.S. Department of Veterans Affairs
  - VA Medical Centers
    - Clinical and administrative roles
    - · Academic appointments
  - VA Central Office
    - Variety of IT leadership roles
      - CHIO/CMIO Chief Health [Medical] Informatics Officer
      - CIO (equivalent / acting)
  - Trip to Alaska
- U.S. Department of Health and Human Services
  - National Coordinator for Health IT
- Open Health Tools, Inc.
  - CHIO Chief Health Informatics Officer
  - Multinational, non-profit organization with diverse participants
    - Improve health and well-being through health IT transformation
    - Vendor neutral open source

#### Agenda

- My Background
- Last minute modification Dr. Morrow's "Model T"
- 4 Building Blocks for Our Future Health System
  - 1. "Ideal": A Square Wave Life Curve
  - 2. A Systems Perspective on Health
  - Transforming Health & Health Care
  - 4. A Learning Health System
- The Capstone of Technology Improvement
- Personal Health

# FEELING **PISCOURAGED** BY THE SLOW PACE OF PROGRESS IN HEALTH IT??

# WHAT WAS THE MEDICAL TECHNOLOGY ADOPTION CHALLENGE –

A CENTURY AGO?

#### AUTOMOBILES FOR PHYSICIANS' USE

ARE THEY PRACTICAL? ARE THEY DESIRABLE? ARE THEY ECONOMICAL?

ARE THEY BETTER THAN HORSES?

THE AUTO AS A PHYSICIAN'S VEHICLE.

F. M. CRAIN, M.D.

REDFIELD, S. DAK.

Pp. 1172-3

#### Graft and Robbery

The Features of an Ideal Car.

An ideal physician's car has not yet been placed on the market. The nearest approach to it, in my opinion, is the

Pp. 1177

THE PHYSICIAN'S AUTOMOBILE
INDISPENSABLE.
HENRY ENOS TULEY, M.D.
LOUISVILLE, KY.

### THE AUTO TOO MUCH TROUBLE TO KEEP IN ORDER.

F. A. SWEZEY, M.D. WAKONDA, S. DAK.

P. 1174

In my practice, which is entirely country work, I have used, for two seasons, an 8-H.P., one cylinder, water-cooled, gasoline runabout (III), and I find that the automobile is not practical for such work, owing to bad roads and inclement weather. They are more for pleasure than for general business use, and I would not advise any physician in country work to buy one and to rely entirely on it. In night work or in wet or cold weather an auto is very annoying; in fact, I have sold mine, and will never buy another. As my

P. 1197

THE MOTOR CYCLE FOR THE COUNTRY DOCTOR.

W. NICHOLAS LACKEY, M.D. GALLATIN, TENN.

Relative Cost of Keeping a	Horse and an Automobile.
HORSE AND RIGS.	AUTOMOBILE.
RELATIVE FIRST COST OF EQUIPMENT.	
Buggy, rubber tire       100         Cutter       50         Cart       25         Two sets harness       40         Two day blankets       20         Two night blankets       10	Automobile\$700.00 Fur robe
One fur robe	AND VELU
Oats, 300 bushels, at 30c. \$117  Hay, 2 tons	Gasoline, 120 gals., at 18c. 21.60
REPAIRS AND HIRED MAN.	
	Repairs (average circum-
Total \$1.065	Total \$840.80
No. of months' service, 11 No. of months' service, 10. These estimations are calculated on a basis of two years' service.	
Time saved in making trips, 40 per cent.	

P. 1193



#### AUTOMOBILE ACCESSORIES AND AIDS TO COMFORT

Vol 58 (14) P. 1058

## WHY WERE THERE NO MORE JAMA "AUTO" ARTICLES AFTER 1912?



Ford Model "T" production began 1 October 1908

# WHAT'S OUR PROBLEM TODAY? (HEALTHCARE DELIVERY)

# TODAY'S **BEST**ELECTRONIC HEALTH RECORDS

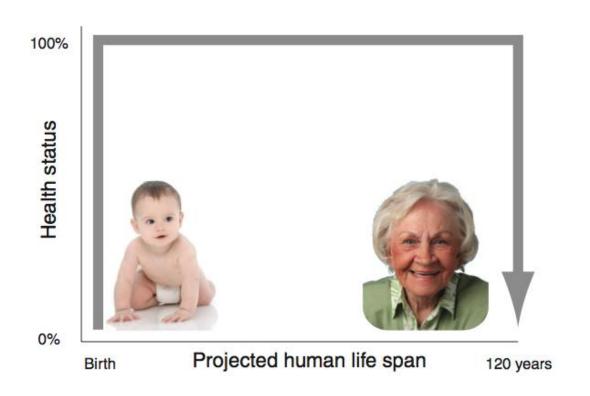


# TODAY'S **BEST**ELECTRONIC HEALTH RECORDS



... are not yet a "Model T"

## Conceptual Goal: "Square Wave Life Curve"



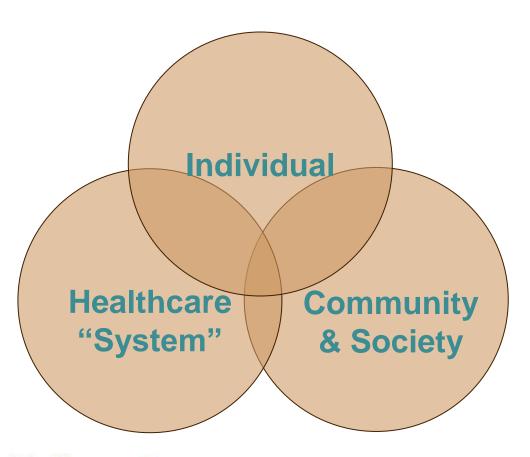
"To achieve this ideal, the health system would have to concentrate more on

wellness, health, prevention, and just plain living,

bringing these factors into balance with the attention currently paid to diagnosing and treating disease."

From Michael M. E. Johns, "Panel on the Vision for Integrative Medicine: A Summary of the February 2009 Summit" in <a href="Integrative Medicine">Integrative Medicine</a> and the Health of the Public: A Summary of the February 2009 Summit, Schultz AM et al., eds., 2009

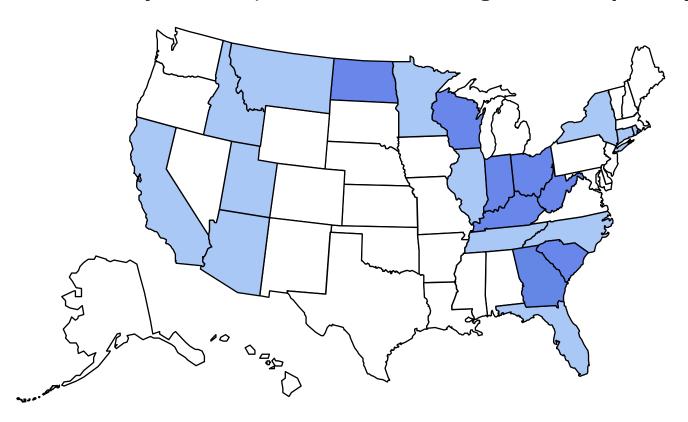
#### **Health – A Systems Perspective**



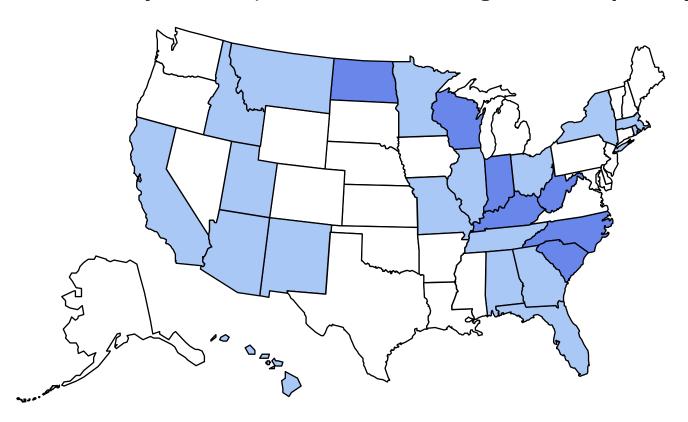
#### **HEALTH Perspective**

 Public health improvements account for the greatest increase in U.S. life expectancy in the 20th Century.

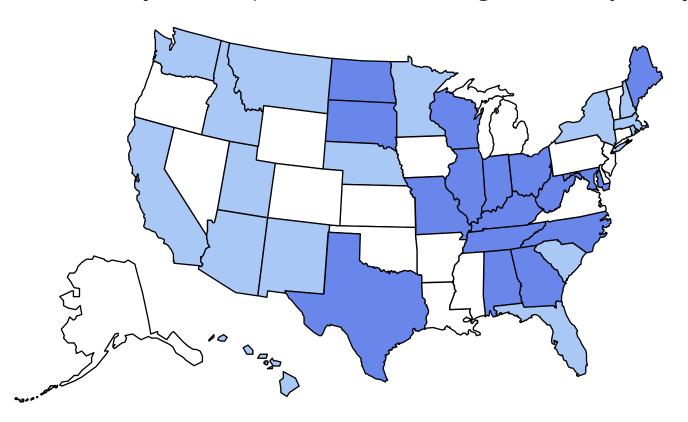
Only 15% of health status is related to health care.



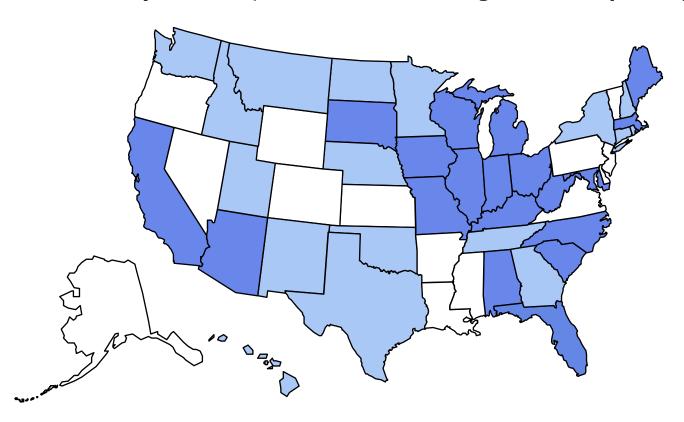




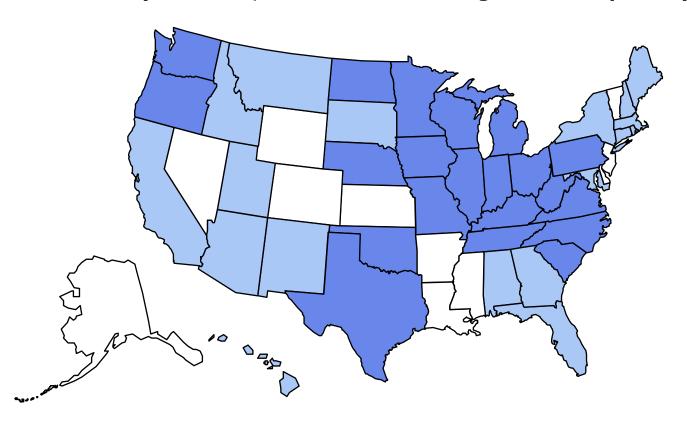




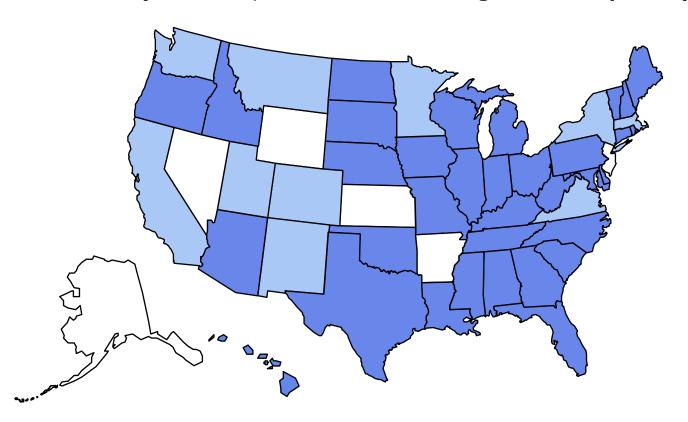




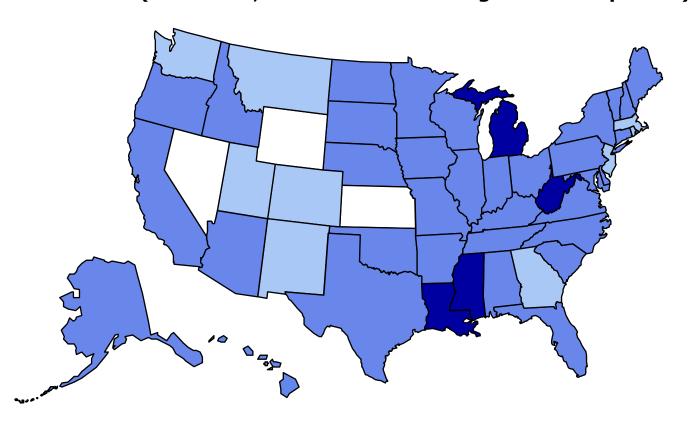




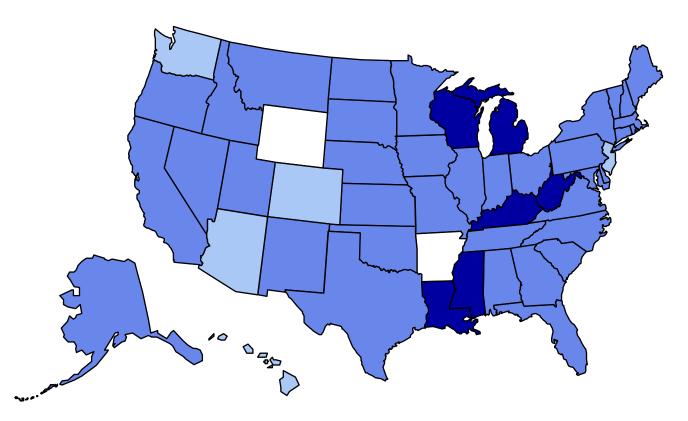




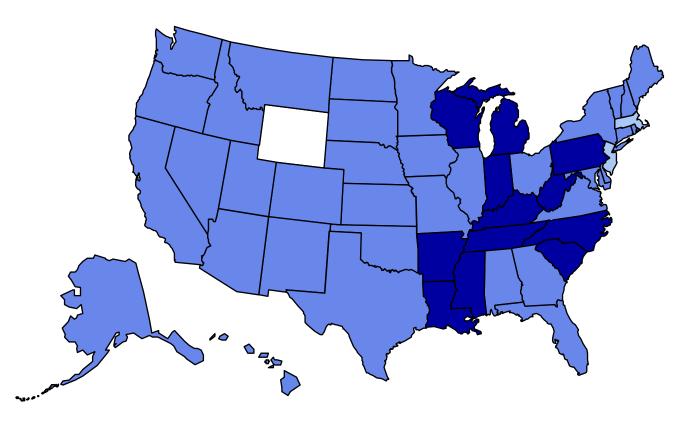




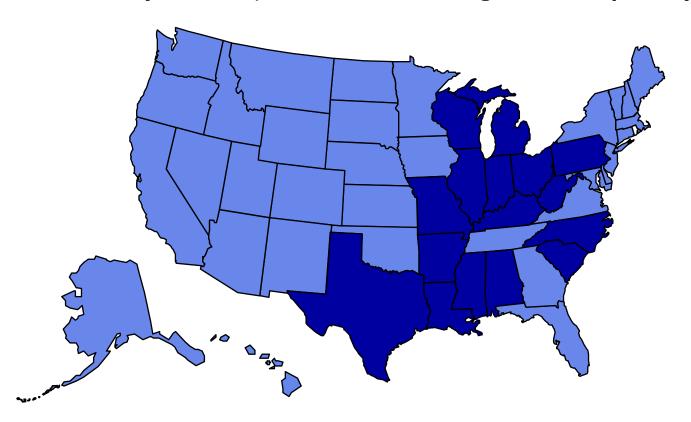


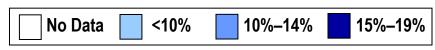


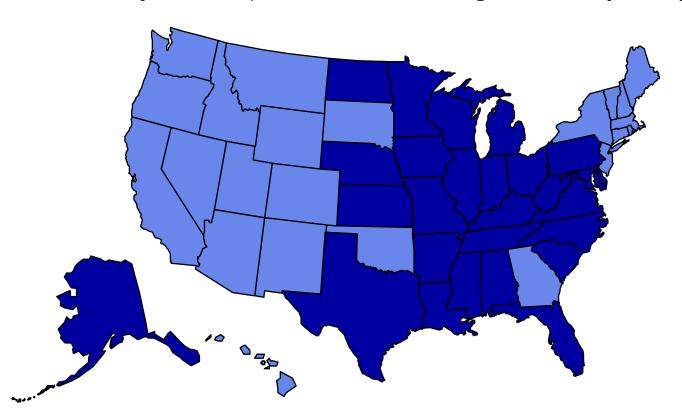




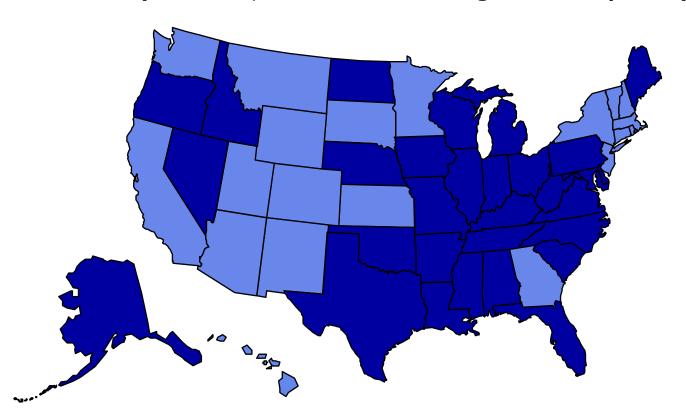




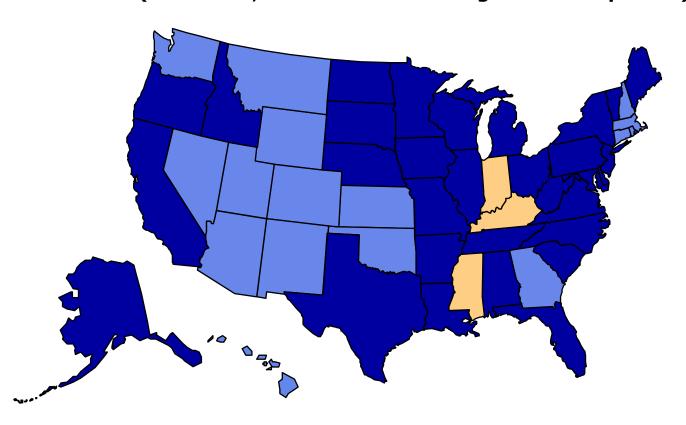




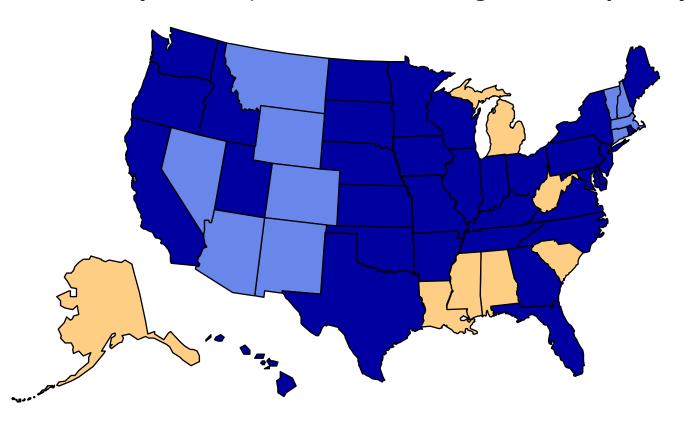




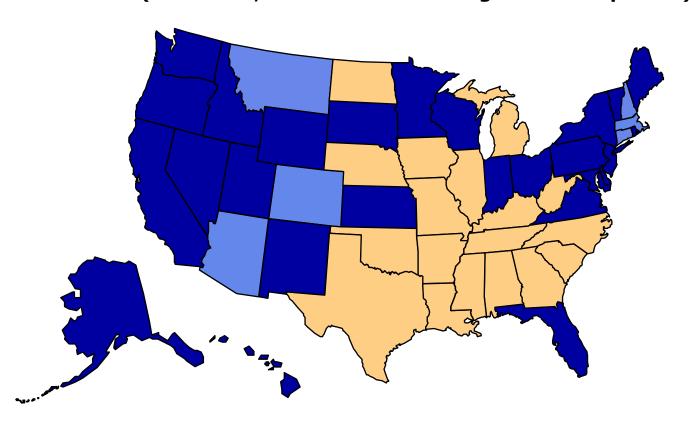




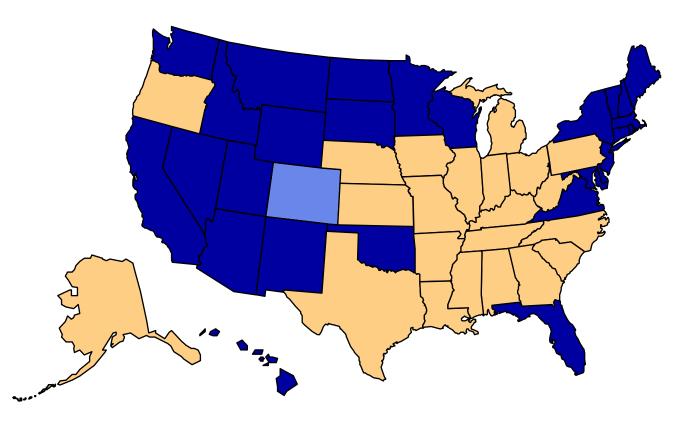




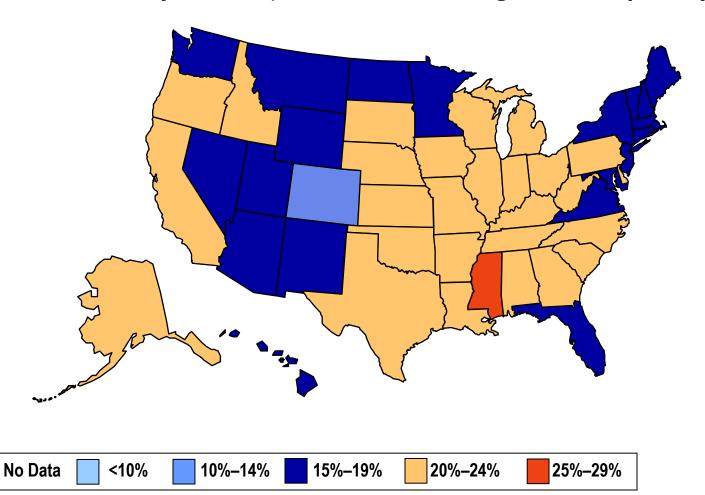


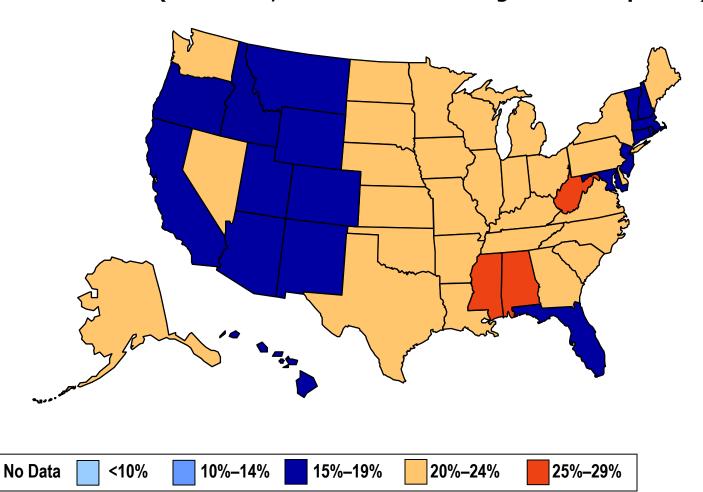


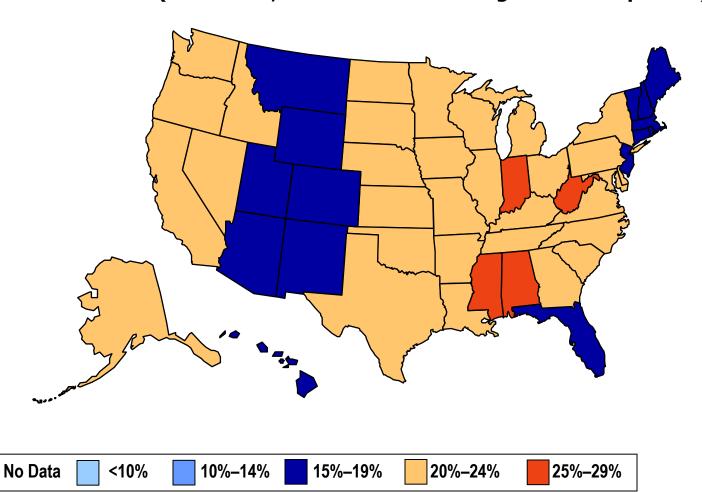


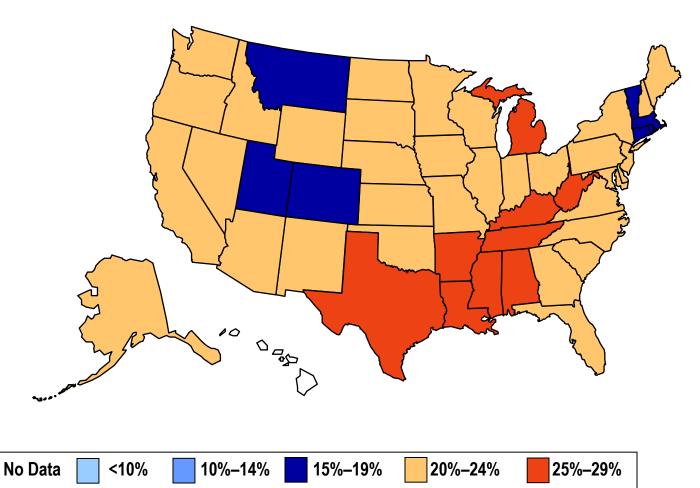


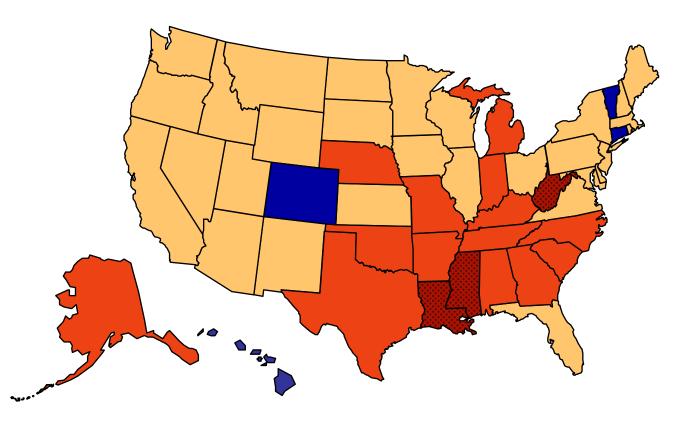


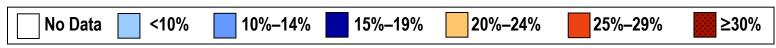


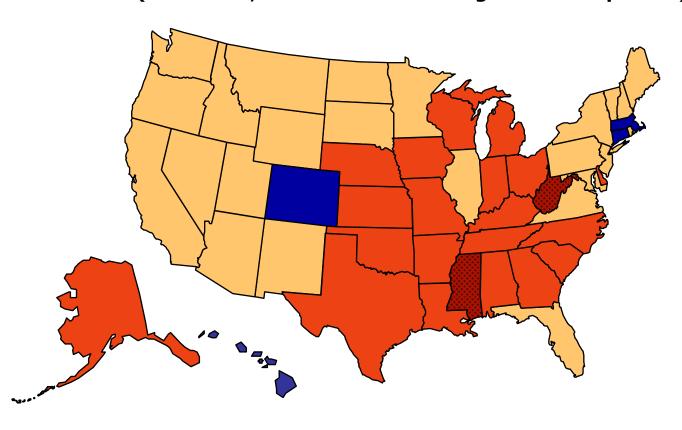


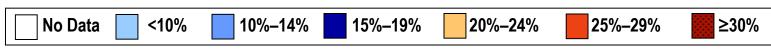


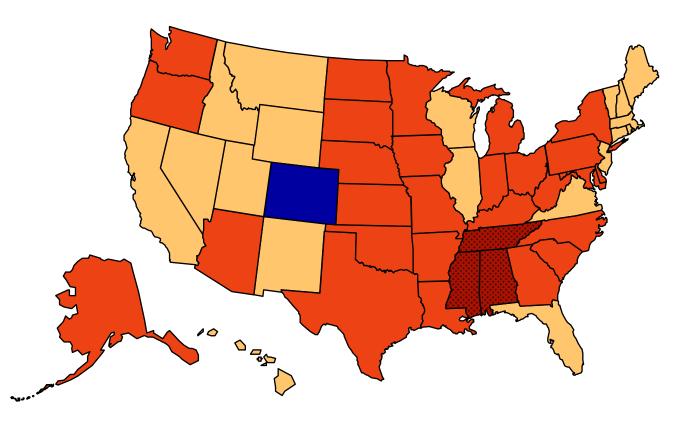


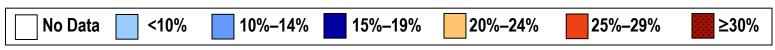


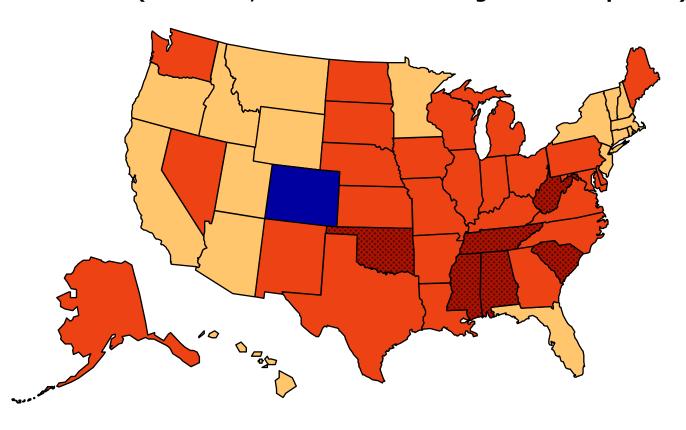


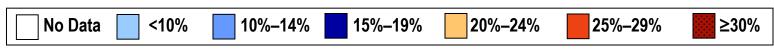


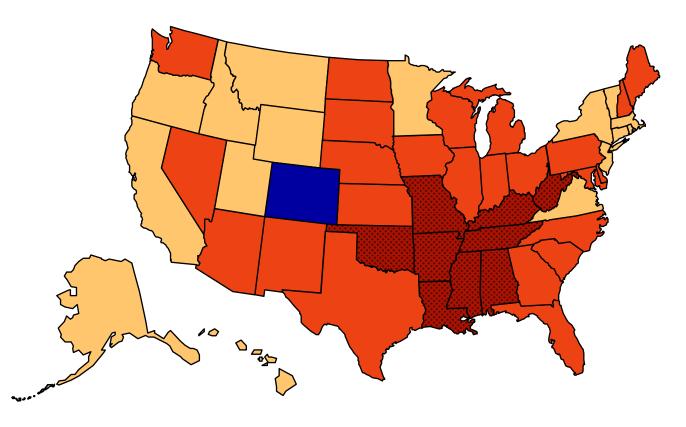


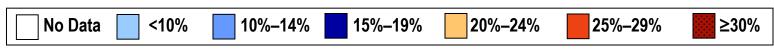


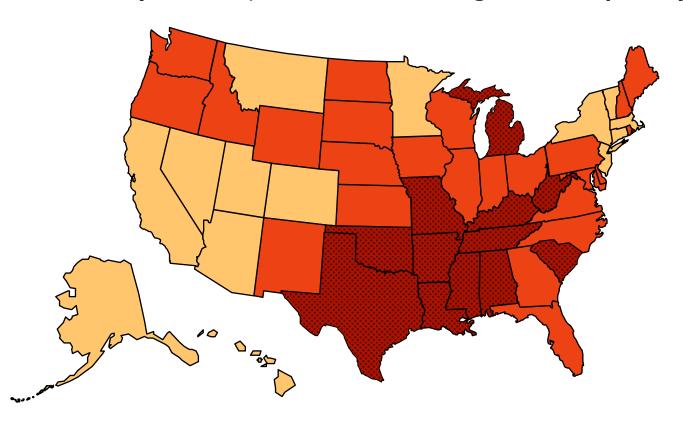


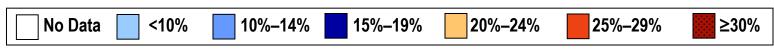




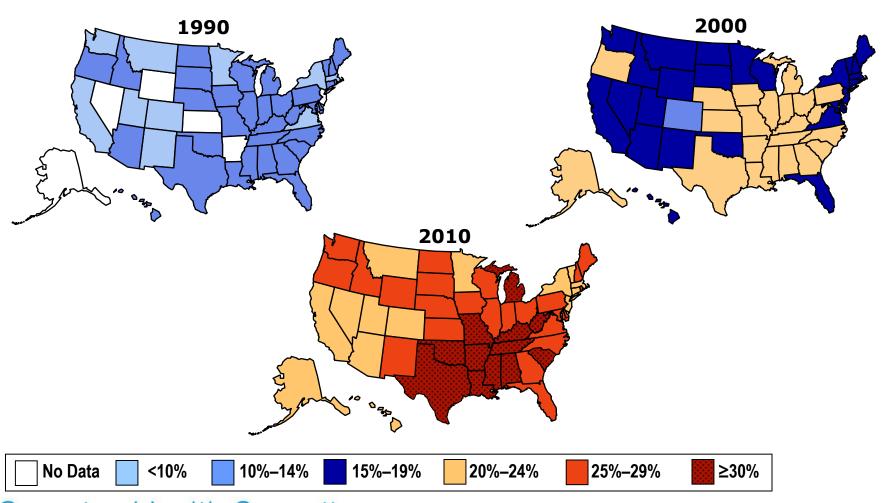


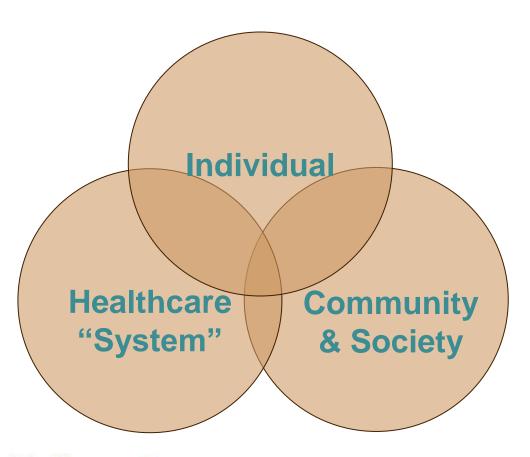


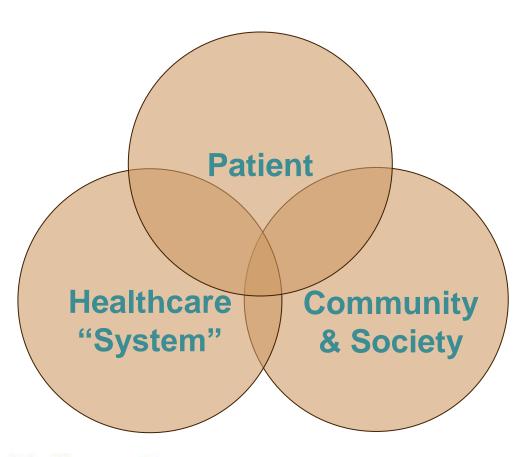


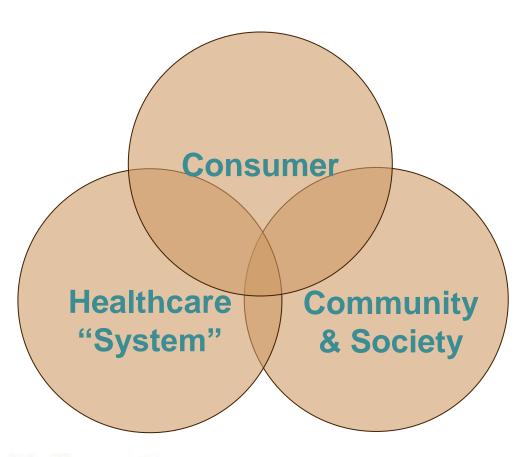


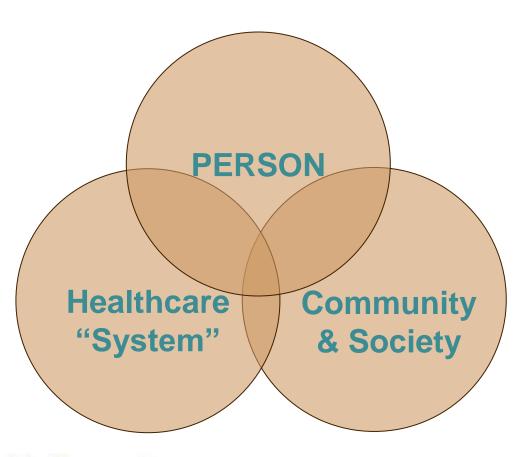
BRFSS, 1990, 2000, 2010

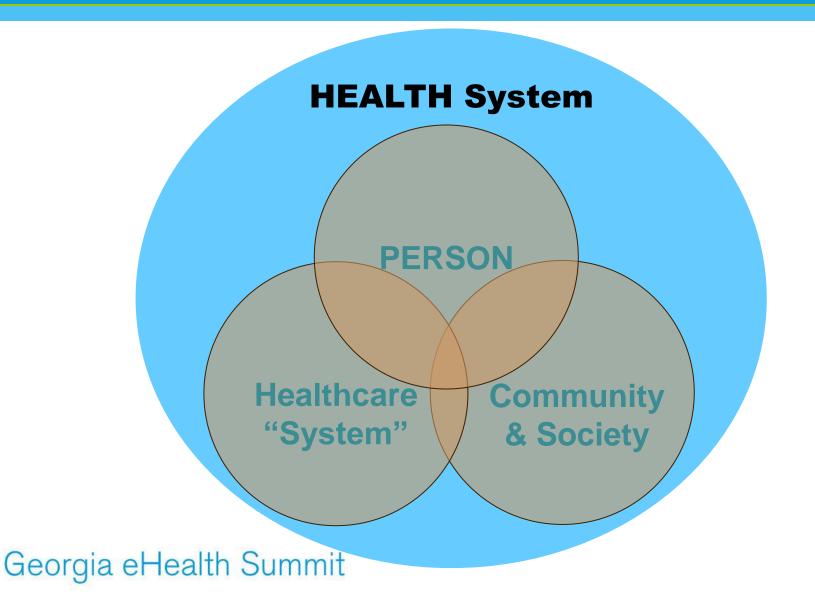




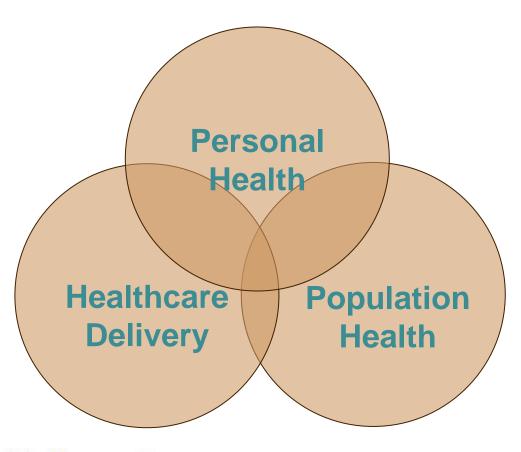




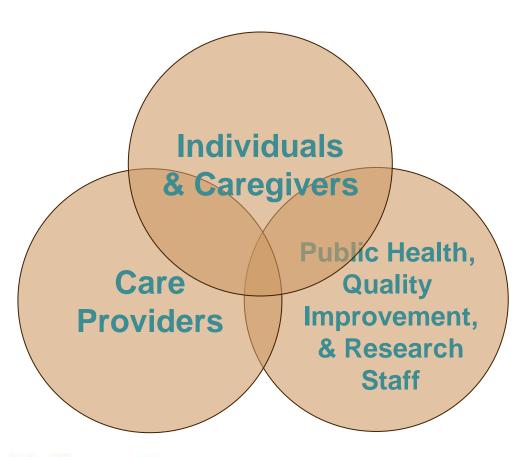


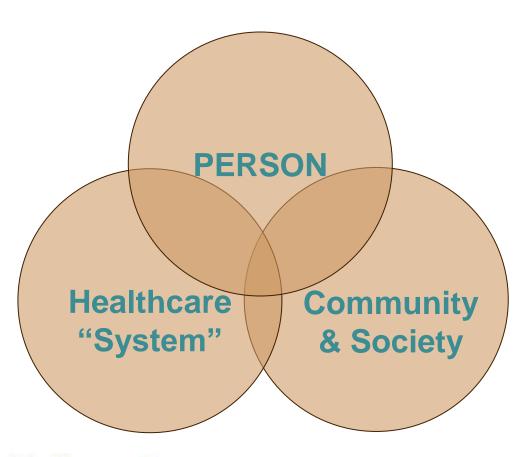


### 3 Health IT - Dimensions

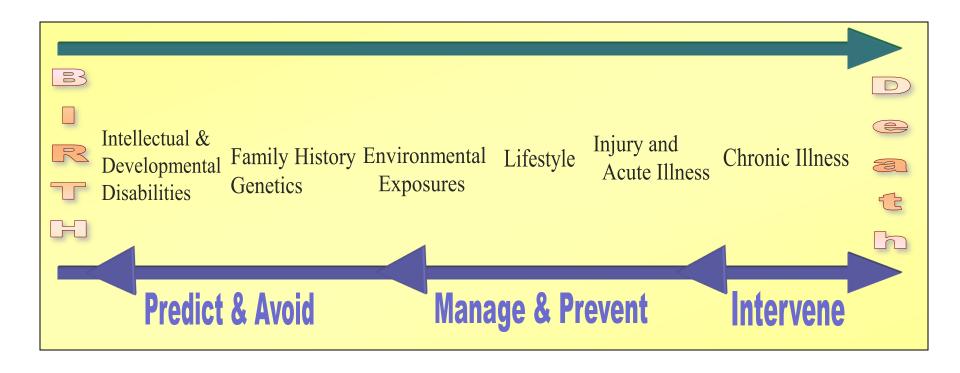


### 3 Health IT – User Groups





# Transforming Health & Health Care: From Treating to Preventing to Predicting



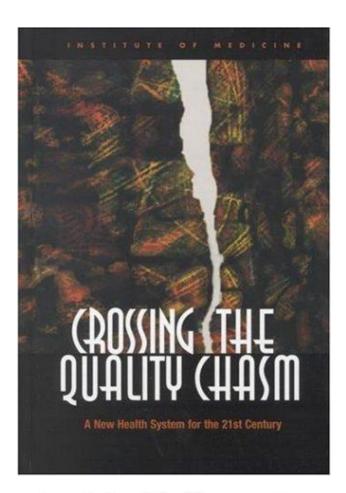
<sup>1.</sup> Adapted from Perlin, Dr. Jonathan B, Healthcare 1015 & beyond: Some Thoughts on Planning Ahead, p. 95

#### **EMERGING CONCEPT:**

A LEARNING HEALTHCARE SYSTEM →

A LEARNING HEALTH SYSTEM

### **Institute of Medicine - 2000**



#### Appendix B

Redesigning Health Care with Insights from the Science of Complex Adaptive Systems

Paul Plsek

The task of building the 21st-century health care system is large and complex. In this appendix, we will lay a theoretical framework for approaching the design of complex systems and discuss the practical implications.

#### SYSTEMS THINKING

A "system" can be defined by the coming together of parts, interconnections, and purpose (see, for example, definitions proposed by von Bertalanffy [1968] and Capra [1996]). While systems can be broken down into parts which are interesting in and of themselves, the real power lies in the way the parts come together and are interconnected to fulfill some purpose.

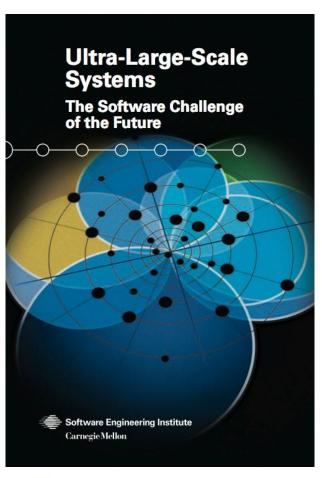
The health care system of the United States consists of various parts (e.g., clinics, hospitals, pharmacies, laboratories) that are interconnected (via flows of patients and information) to fulfill a purpose (e.g., maintaining and improving health). Similarly, a thermostat and fan are a "system." Both parts can be understood independently, but when they are interconnected, they fulfill the purpose of maintaining a comfortable temperature in a given space.

The intuitive notion of various system "levels," such as the microsystem and macrosystem, has to do with the number and strength of interconnections between the elements of the systems. For example, a doctor's office or clinic can be described as a microsystem. It is small and self-contained, with relatively few interconnections. Patients, physicians, nurses, and office staff interact to produce

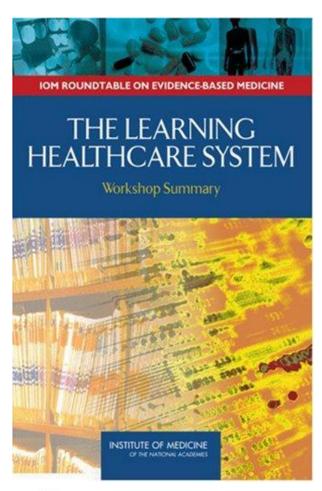
Consultant, Paul E. Plesk and Associates, Inc., Roswell, Georgia.

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### Carnegie-Mellon SEI Report - 2006



### **Institute of Medicine - 2007**



### Institute of Medicine – "The Learning Health System Series"

Roundtable on Value & Science-Driven Health Care

#### INSTITUTE OF MEDICINE

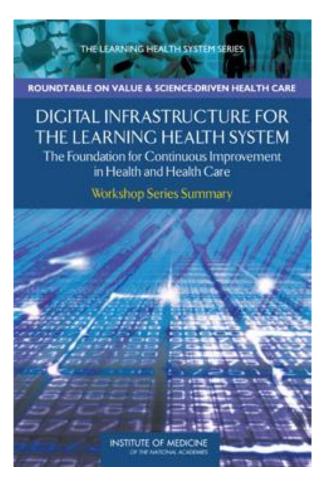
OF THE NATIONAL ACADEMIES

Advising the nation • Improving health

## The Learning Health System Series

Continuous improvement and innovation in health and health care

### **Institute of Medicine - May 2011**



#### BOX 9-3 Ultra-Large-Scale (ULS) System Characteristics

The ULS approach can be best described by a set of characteristics that tend to arise as a result of the scale of the system (in this case health and health care) rather than a prescriptive set of required components. Previous work on the ULS concept has identified the following key characteristics of ULS systems:

**Decentralization:** The scale of ULS systems means that they will necessarily be decentralized in a variety of ways—decentralized data, development, evolution, and operational control.

Inherently conflicting, unknowable, and diverse requirements: ULS systems will be developed and used by a wide variety of stakeholders with unavoidably different, conflicting, complex, and changing needs.

Continuous evolution and deployment: There will be an increasing need to integrate new capabilities into a ULS system while it is operating. New and different capabilities will be deployed, and unused capabilities will be dropped; the system will be evolving not in phases, but continuously.

**Heterogeneous, inconsistent, and changing elements:** A ULS system will not be constructed from uniform parts: there will be some misfits, especially as the system is extended and repaired.

**Erosion of the people/system boundary:** People will not just be users of a ULS system; they will be elements of the system, affecting its overall emergent behavior.

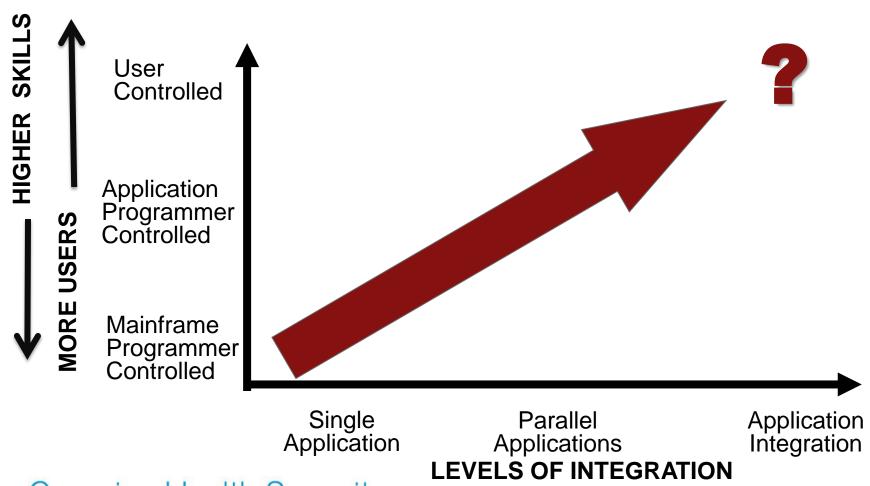
**Normal failures:** Software and hardware failures will be the norm rather than the exception.

**New paradigms for acquisition and policy:** The acquisition of a ULS system will be simultaneous with the operation of the system and require new methods for control.

SOURCE: Northrop et al., 2006.

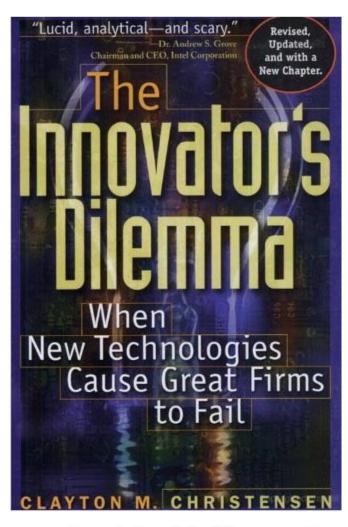
http://www.iom.edu/Reports/2011/Digital-Infrastructure-for-a-Learning-Health-System.aspx

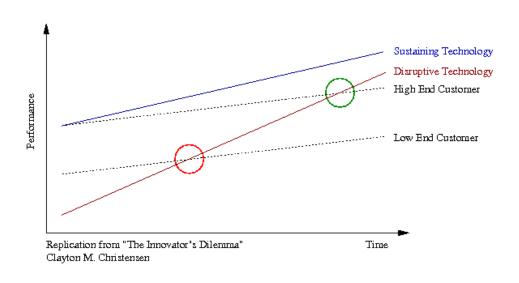
### IT Technology Evolution



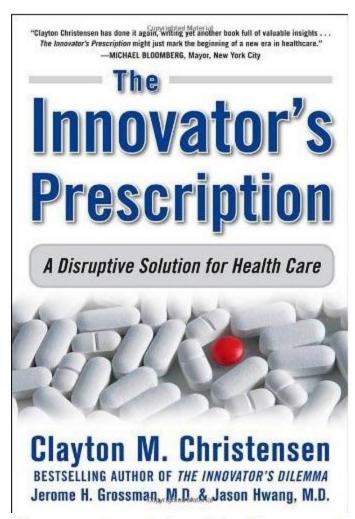
Georgia eHealth Summit

### Disruptive Technologies





### **Applied to Healthcare**



Markets are disrupted—and products "go viral" that are

faster, easier, cheaper, & more convenient

than previous ones

# Perspective of People on Their Future Health Care



- Stay Healthy
  - Prevention
- Increased Self-Care
  - Personal Health support
- Convenient Care
  - Minimize time and travel
  - Tele-care
  - Tele-monitoring
- High Quality, Coordinated Care
  - Enable care across providers & sites
  - Allow access to a lifetime of information wherever and whenever <u>THEY</u> choose

### Better Health

# Taking Charge of His Health(Care) with a PHR

#### WHO

 Orlando Sellers, 57 a Vietnam War Vet, and human resources specialist at the VAMC, Washington, DC

#### WHAT

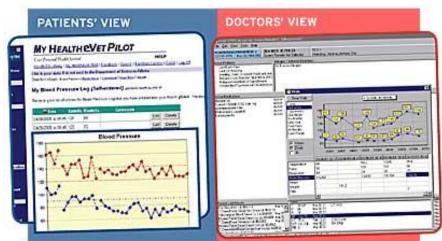
 Sellers can pull up his electronic medical record in My Health<u>e</u>Vet and enter his daily blood pressure reading. If he sees it spiking he can send an email to his doctor who may then ask him to come in for a brief check-up.

#### WHAT THEY SEE

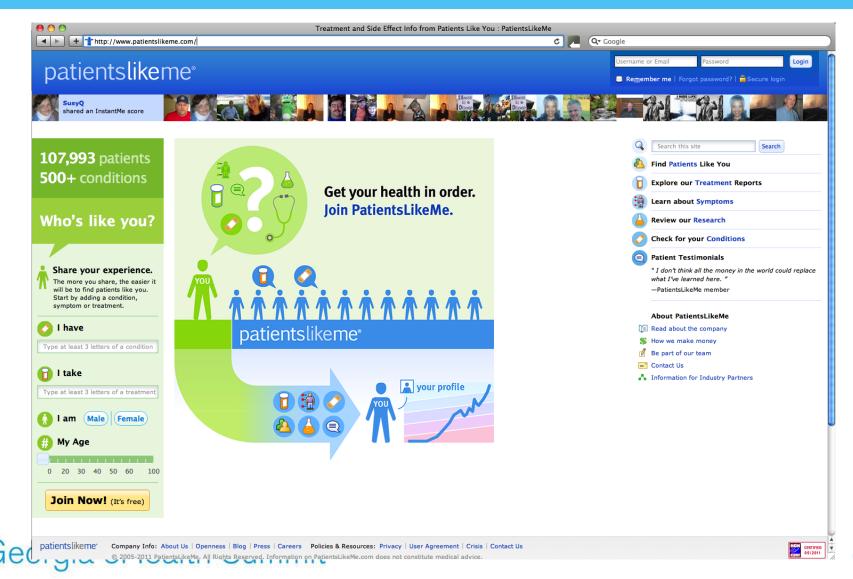
 Patients view the basic information in their record, but clinicians get much greater detail. The charts show the difference between their views.



Consumer Reports March 2006



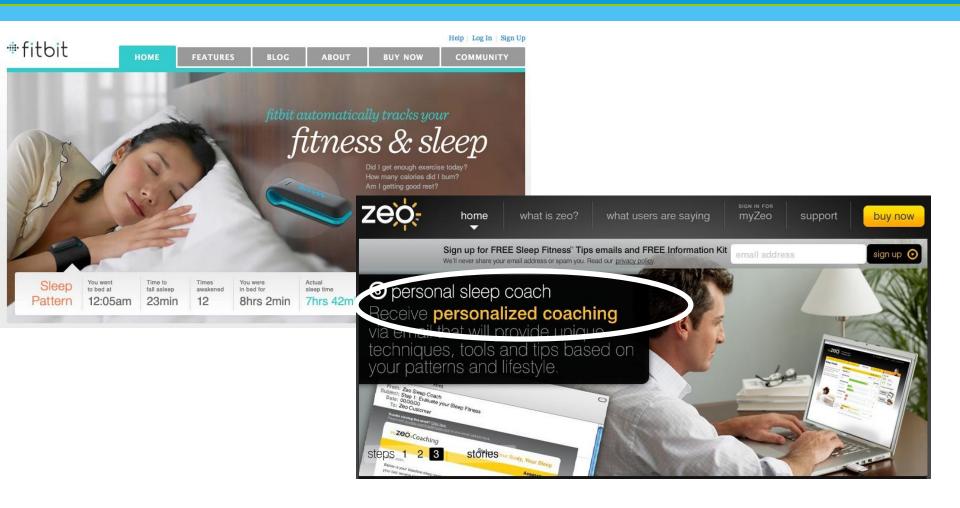
### **Patients Like Me**



### The "Quantified Self" Movement



### **Monitor / Track / Help Sleep**

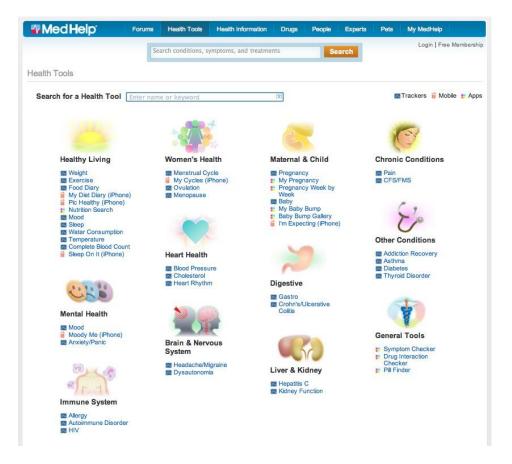


### **Your Mood**



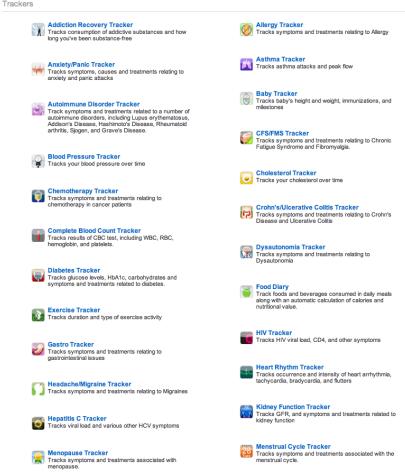


### And Lots More – And this is just one Web Site!

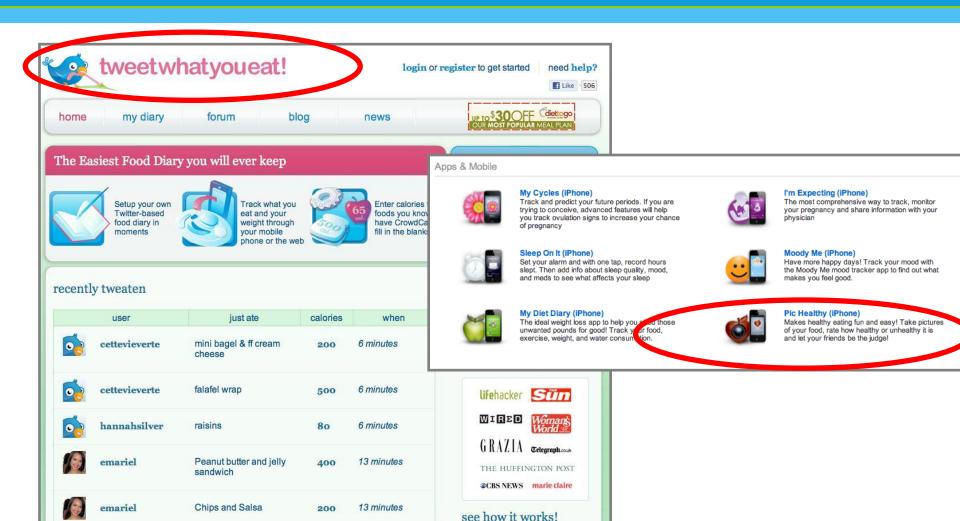


#### Tools

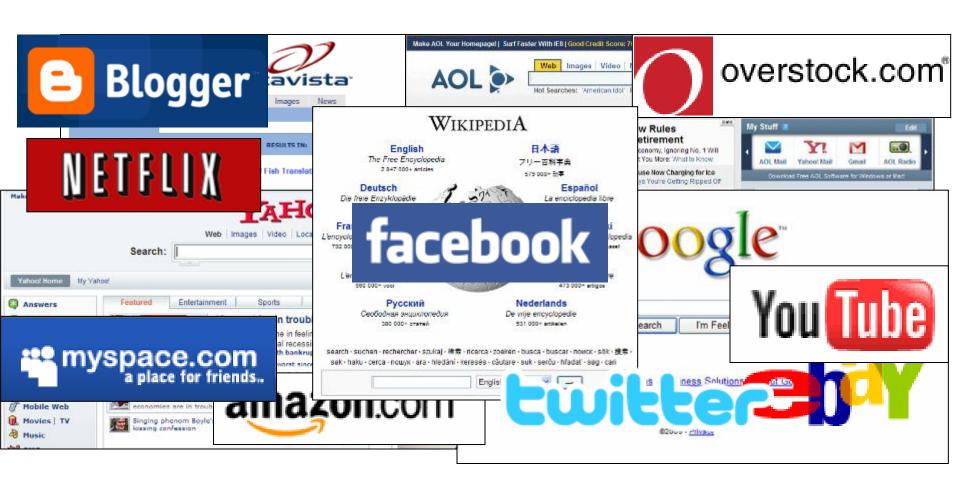
#### **Trackers**



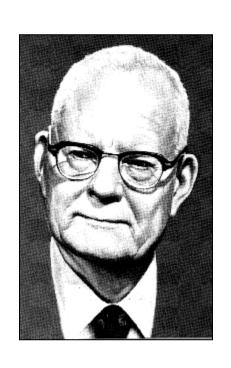
### **And Tie into Social Media**



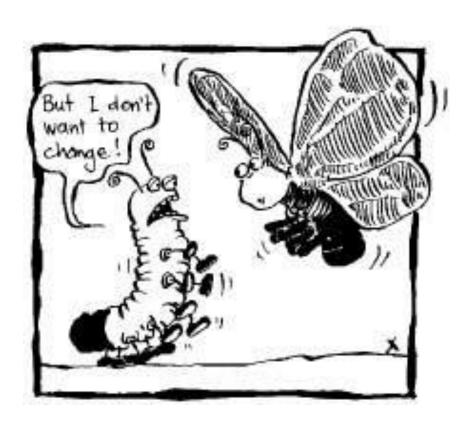
# 1994 - Did You Know What the Future Was Going to Look Like?



### Notable Quote – W. Edwards Deming

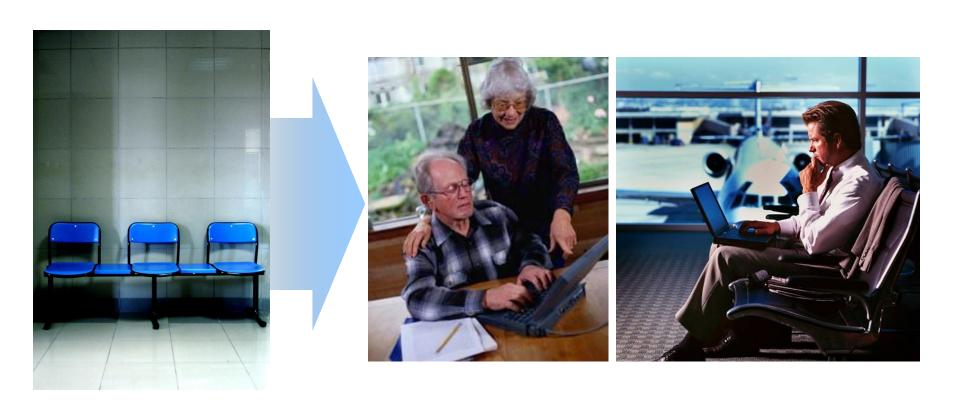


"You don't have to change; survival is not mandatory."



Created by Joe Chianakas

### **Transforming Health**



The "locus of control" is changing.

And the Future Health System We Unleash When We Finally Have the Technology Tools We've Been Dreaming About?

### It's UNIMAGINABLE!!



Robert M. Kolodner, MD
Chief Health Informatics Officer
Open Health Tools, Inc.

rob@openhealthtools.org